ACCESSION NR: AP4007806 S/0049/63/000/012/1833/1836

AUTHOR: Gal'perin, Ye. I.; Zayonchkovskiy, M. A.

TITLE: Methods and techniques of deep seismic sounding at sea from submarines

SOURCE: AN SSSR. Izvestiya. Seriya geofizicheskaya, no. 12, 1963, 1833-1836

TOPIC TAGS: seismology, deep seismic sounding, submarine seismic sounding, hydrophone, underwater seismic sounding, suboceanic structure, earth crust study

ABSTRACT: Soviet submarines have been used since 1958 as underwater seismic stations in deep seismic soundings in the Pacific Ocean. The equipment used differed little from that on surface vessels, consisting of hydrophones mounted outside the hull connected to amplifiers and filters to receive seismic waves at 3—12 and 30—300 cps. The data were recorded on photooptical and magnetic tape recorders. The submarines also carried chronometers to synchronize operations with the

Card 1/2

ACCESSION NR: AP4007806

surface vessels. During the survey the submarines remained submerged and stationary while the surface vessel moved along a predetermined course setting off 150-kg charges programmed at 7.5—15 min intervals with an accuracy of ±1—2 sec. About 2000 shots [presumably depth charges] were fired covering a profile more than 8500 km long. Though the results were satisfactory, and at a depth of 70—100 m the readings were not affected by wave action even in a rough sea, submarines were found to be too expensive for ordinary use. Orig. art. has: 1 figure.

ASSOCIATION: Akademiya nauk SSSR. Institut fiziki Zemli (Academy of Sciences SSSR. Institute of Physics of the Earth)

SUBMITTED: 21Dec62 DATE ACQ: 20Jan64 ENCL: 00

SUB CODE: AS NO REF SOV: 005 OTHER: 001

Card 2/2

L 39555-66 EWT(1)/EEC(k)-2/T IJP(c) GD
ACC NR: AT6008785 SOURCE CODE: UR/2657/65/000/014/0095/0130

AUTHOR: Agapova, M. G.; Gal'perin, Ye. I.

ORG: none

TITLE: Principles of thermal design of radiator-type semiconductor devices

SOURCE: Poluprovodnikovyye pribory i ikh primeneniye; sbornik statey, no. 14, 1965, 95-130

TOPIC TAGS: semiconductor device, heat transfer, transistor/P201A transistor

ABSTRACT: Three parts are discernible in the present article: (1) Well-known generalities of heat transfer (heat conduction, convection, radiation; simulation of heat transfer by electric circuits; relations between maximum temperature, mean temperature, and the duty factor of pulses passing the junction); (2) Types and functioning of semiconductor-device radiators (a compilation based on 1956-63

Card 1/2 UDC: 621.382.017.72

Card 2/2 HS

GAL'PERIN, Ye.I.; GORDONOV, A.Yu.; FOMCHENKOV, V.M.

Designing trigger circuits for point contact crystal triodes with consideration of interchangeability. Poluprov. prib. i ikh prim. no.2:340-352 '57. (MIRA 11:6)
(Transistors) (Electonic circuits)

GALPERIN, Ye I.

9(4) 24(6) pr.3 PHASE I BOOK EXPLOITATION SOV/1765

Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi

Poluprovodnikovaya elektronika (Semiconductor Electronics) Moscow, Gosenergoizdat, 1959. 222 p. 13,950 copies printed.

Ed.: V.I. Shamshur; Tech. Ed.: K.P. Voronin.

PURPOSE: The book is intended for engineering and technical personnel working with semiconductor devices.

COVERAGE: The book is a collection of lectures delivered at the All-Union Seminar on Semiconductor Electronics in March 1957. The seminar was organized by the Scientific and Technical Society of Radio Engineering and Electrical Communications imeni A.S. Popov. The authors of the lectures have attempted to systematize the basic information on the operation of semiconductor devices. The articles describe the operation and characteristics of crystal diodes and transistors and discuss their application in various low-frequency, high-frequency and pulse circuits. No personalities are mentioned. References appear at the end of each article.

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Semiconductor Electronics SOV/1765

TABLE OF CONTENTS:

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cussion of servomechanism transistor components, such as a-c amplifiers, modulators, and phase-sensitive amplifiers. There are 7 references of which 6 are Soviet (including 1 translation), and 1 English.

PHASE I BOOK EXPLOITATION SOV/4675

Gal'perin, Ye. I., and Yu. N. Sulitskiy

Poluprovodnikovyye logicheskiye pereklyuchayushchiye skhemy (Semiconductor Logical Switching Circuits) Moscow, Gosenergoizdat, 1960. 243 p. Errata slip inserted. No. of copies printed not given.

Ed.: V. G. Masharova; Tech. Ed.: B. V. Smurov.

PURPOSE: This survey is intended for specialists working in the field of semiconductor pulse devices and digital computers. It may also be used by students taking advanced courses in related fields at schools of higher technical education.

COVERAGE: The survey deals with problems of design and calculation of various semiconductor logical switching circuits and assemblies used in digital computers. Characteristic features of semiconductor switching devices are described, and basic circuit diagrams applied in semiconductor logical systems are analyzed. The basic sources of this survey are 5 English books and 5 articles in periodicals, published in the USA, and the Proceedings of a

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symposium held in 1959 in Philadelphia. A list of these sources is given at the end of the foreword. No personalities are mentioned. References and a bibliography accompany each chapter.

TABLE OF CONTENTS:

FEDOTOV, Ya.A., otv.red.; BARKANOV, N.A., red.; BERGEL'SON, I.G., red.; BROYDE, A.M., red.; GAL'PERIN, Ye.I., red.; KAMENETSKIY, Yu.A., red.; KAUSOV, S.F., red.; KONKV, Yu.I., red.; KRASILOV, A.V., red.; KULIKOVSKIY, A.A., red.; NIKOLAYEVSKIY, I.F., red.; STEPANENKO, I.P., red.; VOLKOVA, I.M., red.; SMUROV, B.V., tekhn.red.

[Semiconductor devices and their applications] Poluprovodnikovye pribory i ikh primenenie; sbornik statei. Moskva, Izd-vo "Sovetskoe radio". No.6. 1960. 333 p. (MIRA 13:12)
(Semiconductors) (Transistors)

FEDOTOV, Ya.A., otv.red.; GAL'PERIN, Ye.I., zamestitel' otv.red.; BARKANOV, N.A., red.; BERGEL'SON, I.G., red.; BROYDE, A.M., red.; KAMENETSKIY, Yu.A., red.; KAUSOV, S.F., red.; KRASILOV, A.V., red.; KULIKOVSKIY, A.A., red.; NIKOLAYEVSKIY, I.F., red.; PENIN, N.A., red.; STEPANENKO, I.P., red.; VOLKOVA, I.M., red.; SVESHNIKOV, A.A., tekhn.red.

[Transistor devices and their applications; collection of articles] Poluprovodnikovye pribory i ikh primenenie; sbornik statei. Moskva, Izd-vo "Sovetskoe radio." No.4. 1960. 423 p. (MIRA 13:5)
(Transistors) (Electronic circuits)

GAL'PERIN, Ye.I. (g.Moskva)

Remarks on the terminology in the field of transistor electronics. Izv. vys. ucheb. zav.; radiotekh. 4 no.1:104 Ja-F '61. (MIRA 14:4)

(Transistors—Terminology)

AVER'YANOV, A.G.; VAYTSMAN, P.S.; GAL'PERIN, Ye.I.; ZVEREV, S.M.; ZAYONCHKOVSKIY, M.A.; KOSMINSKAYA, I.P.; KRAKSHINA, R.M.; NIKIOTA, G.G.; TULINA, Yu.V.

Deep seismic sounding in the transition zone between the continent of Asia and the Pacific Ocean during the International Geophysical Year. Izv. AN SSSR. Ser. geofiz. no. 2:169-184 F '61. (MIRA 14:2)

1. Institut fiziki Zemli AN SSSR.
(Soviet Far East--Seismometry)
(Earth--Surface)

GAL'PERIN, Ye.I.

Changes in the direction of particle displacement during the passage of seismic waves through the low velocity zone. Izv. AN SSSR. Ser.geofiz. no.5:585-594 My '62. (MIRA 15:8)

1. Institut fiziki Zemli AN SSSR.
(Seismology)

GAL'PERIN, Ye.I.; FROLOVA, A.V.

Study of seismic waves by combined vertical and horizontal profiling. Izv. AN SSSR. Ser. geofiz. no.9:1307-1323 S '63. (MIRA 16:10)

1. Institut fiziki Zemli AN SSSR.

GAL'PERIN, Ye. I.

Experience gained in detailed study of a velocity model for the upper part of the cross section under conditions of slight velocity differentiation. Izv. AN SSSR,Ser.geofiz. no. 4:456-474 Ap '64. (MIRA 17:5)

1. Institut fiziki Zemli AN SSSR.

GAL'PERIN, Ye.I.

Study of multiply reflected waves in vertical seismic profiling. Izv. AN SSSR. Fiz. zem. no.12:1-12 '65. (MIRA 19:1)

1. Institut fiziki zemli AN SSSR. Submitted June 11, 1964.

GAL'PERIN, Ye. L. Cand Phys-Math Sci -- (diss) "Change of the crystalline structure of steel during cold and hot treatments." Len, 1957. 11 pp (Len State Ped Inst im A. I. Gertsen. Chair of General Physics), 100 copies (KL, 4-57,80)

GALPERIN, E. L. and TERMINASOV, YU. S.

The National Committee for Crystallography of the USSR

"Crystal Structure Changes of Steel During Hot and cold Treatment" Section 5-10 a paper submitted at the General Assembly and International Congress of Crystallography, 10-19 Jul 57, Montreal, Canada.

C-3,800,189

Gal'perin, Ye.L.

70-4-12/16

AUTHOR: Gal'perin, Ye.L, and Terminasov, Yu.S.

TITLE: Crystal structure changes in steel caused by heat treatment and cold working. (Izmeneniye kristallicheskoy struktury stali pri kholodnoy i termicheskoy obrabotkakh)

PERIODICAL: "Kristallografiya" (Crystallography), 1957, Vol.2, No.4, pp. 519 - 525 (U.S.S.R.)

ABSTRACT: Changes of different structural characteristics, such as dispersion, elastic and static distortions of the α-phase lattice, characteristic temperature and carbide-phase state, were examined during plastic deformation and heat treatment of silicon steel $55C_2$.

Steel samples were statically compressed, and a part of them was filed (after annealing) in order to obtain powder. The roentgenographic part included photographic and ionisation measurements of the diffraction maxima produced by Fe Kα and Mo Kα radiations.

Effects of fragmentation and elastic distortions, responsible for the diffraction-line widening, were separated analytically and by means of harmonic analysis.

Both methods gave a satisfactory coincidence of the elastic distortion data. The calculated crystallite dimensions depended essentially on the choice of the analytic function.

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Crystal structure changes in steel caused by heat treatment and cold working. (Cont.)

The function $1/(1 + K^2x^2)^2$ was found to be the most suitable.

Static distortions of the atomic lattice were rated according to changes in the diffraction-line intensity for the lines (110) and (220) of Fe Kα radiation and $6 \leq \sin^2 \leq 38$ of Mo Kα radiation. The extinction effect was taken into account and it was found that this effect is practically unimportant for Mo radiation. The extinction effect provoked a 10-15% intensity change of the (110) line of Fe Kα radiation.

No regular intensity changes were found in the course of plastic deformation, which apparently proves the absence of a direct connection between static distortions and $\sqrt{(Us^2t)}$.

An attempt was made to state a relationship between the structural characteristics of the samples examined and their mechanical properties, e.g. microhardness. It was found that the hardening of deformed steel is due essentially to submicroscopic structural non-uniformities appearing in the course of the α-phase fragmentation and the formation of severely distorted boundary regions.

An identical method was applied to the examination of oil-hardened steel samples tempered at 200-700 C for 1 hour. The carbide sediment from a part of the samples was obtained and

Crystal structure changes in steel caused by heat treatment and cold working. (Cont.)

examined by means of Fe Kα radiation.

Maximum changes of the steel $55C_2$ characteristic temperature, caused by heat treatment, do not exceed 3-4%.

A regular diffraction intensity change is found in the course of tempering which allows static distortions to be rated according to $\sqrt{(U^2st)}$.

Tempering of hardened steel $55C_2$ at less than 400 C causes the formation of an intermediate carbide with a hexagonal lattice (a = 2.72, c = 4.35 Å). At higher temperatures this carbide transforms actively to cementite.

The main effect on the tempered steel hardening has several factors: carbon state, different admixtures and their distribution, and static distortions of the α-phase lattice.

There are 3 figures and 2 tables, and 21 references, 12 of which are Slavic.

SUBMITTED: February 22, 1957.
AVAILABLE: Library of Congress.

Card 3/3

Gal'perin, Ye.L.

AUTHORS: Gal'perin, Ye.L. and Terminasov, Yu.S. 70-5-24/31

TITLE: On the State of Carbon in Annealed Silicon Steel
(O sostoyanii ugleroda v otpushchennoy kremnistoy stali)

PERIODICAL: Kristallografiya, 1957, Vol.2, No.5, pp. 693 - 695 (USSR)

ABSTRACT: Carbide deposits were extracted from annealed silicon steel $55C_2$ (0.55% C, 1.84% Si) by an electrolytic method and X-ray powder photographs were taken. The steel had been quenched and then annealed at temperatures between 300 and 700 °C for an hour. The powder photographs showed spacings of 2.35 m, 2.18 m, 2.07 s, 1.59 w, 1.37 w and 1.24 w which could be indexed on the basis of a hexagonal cell with a = 2.72 and c = 4.35 Å. This compound occurred when the steel was annealed below 400 °C. Between 400 and 500 °C this presumed intermediate, metastable carbide transforms to platy cementite and above 500 °C intensive coagulation of the carbide phase takes place resulting in a transformation to three-dimensional crystals. There are 1 plate, 1 table and 8 references, 7 of which are Russian.

ASSOCIATION: A.I. Gertsen State Pedagogical Institute, Leningrad. (Leningradskiy Gosudarstvennyy Pedagogicheskiy Institut im. A.I. Gertsena)

1/2

70-5-24/31

... State of Carbon in Annealed Silicon Steel.

SUBMITTED: January 3, 1957

AVAILABLE: Library of Congress

Card 2/2

GAL'PERIN, Ye. L.

AUTHOR: GAL'PERIN, Ye.L., TERMINASOV, Yu.S. 57-6-32/36

TITLE: The Effect of Extinction on X-Ray Interference Intensity in Steel Investigation. (O vliyanii ekstinktsii na intensivnost' rentgenovskikh interferentsiy pri issledovanii stali, Russian)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 6, pp 1379 - 1385 (U.S.S.R.)

ABSTRACT: The experimental results of the heat-treated steels $55C_2$ and 20 are given. Cylindrical samples with a diameter of 2 mm and a length of 20 mm were hardened: $55C_2$ at 900°C in oil and steel 20 at 930° C in water. One part of the samples was tempered for one hour at 700° C, the other part was annealed for 4 hours at 850°C. Cylinders with a diameter of 0,5 mm were obtained from heat treated samples of both types of steel by means of etching in a phosphor-chrome electrolyte. The samples were photographed in a RKD chamber with a diameter of 57,3 mm under Mo-radiation. AGFA films were used. In order to eliminate the K_β radiation from the spectrum and in order to decrease the intensity of the through-going bottom an Nb-filter of a thickness of 0,1 mm was used. The absorption of the secondary characteristic radiation was carried out by means of an aluminum foil of a thickness of 0,3 mm. The investigations showed that in con-

Card 1/2

57-6-32/36

The Effect of Extinction on X-Ray Interference Intensity in Steel Investigation.

sequence of the different treatments in the case of Mo-radiation the influence of extinction can be disregarded in those cases in which the maximum measurements of the blocks in the samples developing coherence are not more than $1 \cdot 2.10^{-4}$ cm and where those reflexes are investigated which correspond to an angle of $\delta > 15^{\circ}$. If soft rays are used (Co, Fe, Cr) a size of block of the 10^{-4} order can be sufficient to cause a remarkable decrease of the intensity of the interference lines of planes with a great reflexion capacity ever if the angles are $\delta > 15 \cdot 25^{\circ}$. (With 2 illustrations, 2 tables, and 6 Slavic references).

ASSOCIATION: A.I.GERZENS, Leningrad Pedagogic Institute, Faculty for General Physics. (Leningradskiy Gos. pedagogicheskiy institut im. A.Gertsena, Kafedra obshchey fiziki, Russian)

PRESENTED BY:
SUBMITTED: 29.12.1956
AVAILABLE: Library of Congress
Card 2/2

AUTHORS: Gal'perin, Ye.L., Terminasov, Yu.S. SOV/163-58-1-47/53

TITLE: On the Distortion of the Crystal Lattices of Thermally Treated Steels (Ob iskazheniyakh kristallicheskoy reshetki termicheski obrabotannoy stali)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 1, pp 252 - 255 (USSR)

ABSTRACT: In the present investigation the influence of the temperature on the tempered steel 55C2 (0,55 % C and 1,84 % Si) as well as on the dimensions of the static distorted lattices of the α-phase was determined. The results showed that with the increase in temperature the static distortion of the lattice of the α-phase does not become so intense.
In the annealing of hardened steel at 400° C, at which temperature the total amount of carbon is already driven off from the solid phase, the magnitude $\sqrt{u^{-2}_{st}}$ was found to be greater than $\sqrt{u^{-2}_{\alpha}}$.

The dependence of $\ln \frac{J^{hkl}_{\text{thermally treated}}}{J^{hkl}_{700^\circ}}$ on $\sum h_i^2$ (k_α = M0)

Card 1/2

On the Distortion of the Crystal Lattices of Thermally Treated Steels

SOV/163-58-1-47/53

was determined for thermally treated steel samples 55C2 and for the steel No. 20.
The greatest decrease in the magnitude of static distortion was found within the temperature range of 300 - 700° C, at which temperature an intense increase in the α-phase occurs.
The values for $\sqrt{u^2_{st}}$ were calculated by the measuring of the intensity of the radiations due to the lines [110] and [220] according to the corrections introduced for the extinction of the line [110].
There are 2 figures, 1 table, and 13 references, 10 of which are Soviet.

ASSOCIATION: Leningradskiy Gosudarstvennyy pedagogicheskiy institut (Leningrad State Pedagogic Institute)

SUBMITTED: October 1, 1957

Card 2/2

GAL'PERIN, Ye.L, inzh.; TERMINASOV, Yu.S., doktor fiz.-mat.nauk, prof.

Radiographic examination of plastic deformations of steel.
Trudy LIEI no.23:68-79 '58. (MIRA 12:5)
(Steel--Testing)
(X rays--Industrial applications)

GAL'PERIN, Ye.L. [translator]; UMANSKIY, Ya.S., red.; MARENKOV, Ye.A., red.; EL'KIND, L.M., red. izd-va; ATTOPOVICH, M.K., tekhn. red.

[Theory of phases in alloys; collection of articles on reports read at a conference on the theory of phases in alloys. Translated from the English] Teoriia faz v splavakh; sbornik statei po dokladam, prochitannym na seminare po teorii faz v splavakh. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 353 p. (MIRA 14:12)

(Phase rule and equilibrium) (Alloys--Metallography)

18.1245
24.7300 (1153, 1482, 1136)

S/126/61/011/005/007/015
E193/E183

AUTHORS: Beletskiy, M.S., and Gal'perin, Ye.L.

TITLE: The crystal structure of some phases in alloys of magnesium with cerium and neodymium

PERIODICAL: Fizika metallov i metallovedeniye, Vol.11, No.5, 1961, pp. 698-703 + 1 plate

TEXT: The object of the present investigation was to ascertain whether phases, present in alloys of magnesium with other rare earth metals of the cerium sub-group, are also present in the magnesium-neodymium system, and to determine the crystal structure of the phases. The experiments were conducted on magnesium-base alloys containing 2-45 wt.% Ce or Nd. All X-ray diffraction work was done on polycrystalline (massive and powder) specimens. The following conclusions were reached.

1. The Mg-Nd alloys with up to 45% Nd consist of phases similar to those present in alloys of Mg with other rare earth metals of the cerium group, namely Mg_9Nd and Mg_3Nd.
2. Depending on the Ce or Nd content in the alloy, the Mg_9Ce and Mg_9Nd phases can exist as one of two modifications: β and β'

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The crystal structure of some phases in alloys of magnesium with cerium and neodymium

in the former, and β and x in the latter case. The x-phase is also present in the Mg-Ce alloys containing more than 35% Ce and quenched from 600 °C.
3. The β-Mg_9Ce and β-Mg_9Nd phases appear to have an ordered cubic structure with the lattice parameters of 14.604 and 14.578 Å respectively.
There are 4 figures, 1 table and 7 references: 2 Soviet and 5 non-Soviet. The English language references read as follows:
Ref.1: M. Hansen, Constitution of binary alloys. McCraw Hill Book Comp. 1958.
Ref.2: G.V. Raynor. The physical metallurgy of magnesium and its alloys, London, 1959.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy alyuminiyevo-magniyevyy institut g. Leningrad.
Card 2/2 (All-Union Aluminium-Magnesium Scientific Research Institute in Leningrad.

SUBMITTED: July 14, 1960

VYDREVICH, Ye.Z.; GAL'PERIN, Ye.L.

Some equilibrium phases in the system Na_2O - Al_2O_3 - CaO - SiO_2 - H_2O. Zhur.prikl.khim. 34 no.9:1971-1979 S '61. (MIRA 14:9)
(Systems (Chemistry))

S/070/62/007/002/002/022
E132/E160

AUTHORS: Gal'perin, Ye.L., and Sandler, R.A.

TITLE: On the crystal structure of $TiCl_2$

PERIODICAL: Kristallografiya, v.7, no.2, 1962, 217-219

TEXT: From X-ray powder photographs the structure of $TiCl_2$ has been confirmed as being of the CdI_2 type with a = 3.50 Å and c = 5.88 Å (± 0.01 Å) and with the single parameter near to 0.25. There were differences between the photographs obtained with Cu and with Mo radiation which were satisfactorily explained by differences between the textures of the material at the middle and at the outside of the specimen which produced differences for radiations of greater and lesser penetrating power.
There are 2 tables.

ASSOCIATION: Vsesoyuznyy alyuminiyevo-magniyevyy institut
(All-Union Institute for Aluminium and Magnesium)

SUBMITTED: Initially, July 13, 1960, and
after revision, September 11, 1961.

Card 1/1

GAL'PERIN, Ye.L.; STROGALIN, Yu.V.

Polytetrafluoroethylene single crystals. Vysokom. soed. 5 no.10:1589 O '63. (MIRA 17:1)

[illegible] D. [illegible] [illegible]MAN, [illegible]; [illegible], [illegible], [illegible] [illegible].

Structure of some derivatives of urea and guanidine. X [illegible] [illegible] of diureides and diguanyls of cyclohexadione and diaryl urea. Zhur. strukt. khim. 5 no.[illegible] Ag '64.
(MIRA 18:[illegible])

ACCESSION NR: AP4012280 S/0070/64/009/001/0102/0103

AUTHORS: Gal'perin, Ye. L.; Dubov, S. S.; Volkova, Ye. V.; Mlenik, M. P.

TITLE: The crystalline structure of polytrifluochloroethylene

SOURCE: Kristallografiya, v. 9, no. 1, 1964, 102-103

TOPIC TAGS: chloroethylene, crystal structure, x ray diffraction, crystal pulling, polymer, camera RKV 86A

ABSTRACT: The authors undertook this work because of contradictions in the literature on the cell dimensions and chain configuration of this compound. They obtained precisely oriented samples of the polymer by pulling in glycerin at 150-160°. The samples were then heated in their extended state for 10 hours at 190-195°. X-ray patterns were obtained on cylindrical film in an RKV-86A camera. The pictures are characterized by lines of the first and second levels and by an absence of equatorial reflections. The lines of the second level correspond to hexagonal packing. The value of the lattice constant was determined to be $a = 6.385 \pm 0.015$ Å. Along the axis of the crystal fiber, $c = 42 \pm 0.2$ Å. Seventeen monomer units are packed along this line, indicating a crystal density of.

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ACCESSION NR: AP4012280

2.20 ± 0.02 g/cm^3, which is in good agreement with experimental density measurements. The absence of equatorial reflections and the presence of intense, almost point, reflections at lines of the first, second, and third layers indicates that the first reflection should be referred to (101), not to (100) as has been done in previous work. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 09Apr63 DATE ACQ: 19Feb64 ENCL: 00

SUB CODE: SS, OC NO REF SOV: 003 OTHER: 005

Card 2/2

[illegible], Ye.L.; [illegible], A.M.

Phase of variable composition in the system Zn - S.
Zhur. neorg. khim. 9 no.7:1767-1768 Jl '64.
(MIRA 17:9)

1. Gosudarstvennyy nauchno-issledovatel'skiy rentgeno-radiologicheskiy institut.

L 19646-65 EPF(c)/EPF(n)-2/EPR/EWT(m)/EWP(b)/EWP(t) Pr-4/Ps-4/Pu-4 IJP(c)/ ASD(m)-3 JD/JG

ACCESSION NR: AP4044812 S/0078/64/009/009/2174/2178

AUTHORS: Yerman, L. Ya.; Gal'perin, Ye. L.; Kolchin, I. K.; Dobrzhanskiy, G. F.; Cherny*shev, K. S.

TITLE: The Bi_2O_3-MoO_3 system

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 9, 1964, 2174-2178

TOPIC TAGS: Bi_2O_3 MoO_3 system, x ray analysis, Bi_2O_3 MoO_3, Bi_2O_3.2MoO_3, Bi_2O_3.3MoO_3, Bi_2O_3.4MoO_3, synthesis, crystal structure, koechlinite

ABSTRACT: The portion of the Bi_2O_3-MoO_3 system containing from 0-70% Bi was subjected to x-ray analysis. Samples were prepared by fusion at 750-950C of the required amounts of Bi and Mo oxides, or by fusion of bismuth nitrate and ammonium molybdate, or by coprecipitation of solutions of $Bi(NO_3)_3$ and $(NH_4)_2MoO_4$. The compounds Bi_2O_3.4MoO indicated by E.H. Muller and F. Van Dyke Cruser (J. Amer. Chem. Soc., 27, 116 (1905)) was not found; it was believed to be a eutectic of $Bi_2(MoO_4)_3$ with MoO_3. Three compounds were found: Bi_2O_3.MoO_3, Bi_2O_3.-2MoO_3 (tetragonal lattice, a = 11.80A; c = 5.40A), and Bi_2O_3. 3

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L 10646-65

ACCESSION NR: AP4044812

$3MoO_3$ (monoclinic lattic, a = 7.85A, b = 11.70A, c = 12.25A, = 116°20'). The molybdenum oxide did not form solid solutions at room temperature in the investigated portion of the Bi_2O_3-MoO_3 system. Orig. art. has: 4 tables.

ASSOCIATION: None

SUBMITTED: 06Jun63 ENCL: 00

SUB CODE: GC, IC NR REF SOV: 008 OTHER: 015

Card 2/2

KOLCHIN, I.K.; GAL'PERIN, Ye.L.; BOBROV, S.S.; HARGOLIS, L.Ya.

Catalytic oxidation and oxidative ammonolysis of propylene on bismuth tungstate. Neftekhimiia 5 no.1:111-117 Ja-F '65.
(MIRA 18:5)

L 33512-65 EWT(m)/EPF(c)/EWG(m)/EPF/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL RWH/WW/RM
ACCESSION NR: AP5003822 S/0190/65/007/001/0016/0018

AUTHORS: Gal'perin, Ye. L.; Strogalin, Yu. V. 31 B 15

TITLE: Symmetry and dimensions of the elementary cell of polytrifluoroethylene

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 1, 1965, 16-18

TOPIC TAGS: polytrifluoroethylene, electrographic analysis, polymer structure

ABSTRACT: Since the x-ray diffraction picture of polytrifluoroethylene (PTFE) obtained by H. S. Kaufman (J. Amer. Chem. Soc., 75, 1477, 1953) for a nonoriented specimen could not be duplicated for an oriented specimen, form and dimensions of the PTFE (M_η = 100 000-300 000) elementary cell were studied electrographically. PTFE films were obtained by placing several drops of 0.2-0.5% PTFE solution in acetone on glycerine (heated to 40-50C). After evaporation, the films were studied either in nonoriented form or after 400-500% elongation. Electrographs of oriented specimens (see Fig. 1 on the Enclosure) show that the structure corresponds to a hexagonal lattice with a = 5.59 ± 0.02 Å and c = 2.50 ± 0.02 Å. The calculated density was 2.01 ± 0.03 gm/cm^3, the pycnometrically measured value was 1.98 ± 0.02 gm/cm^3. The electrograms in conjunction with published data by C. W. Bunn and

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L 33512-65
ACCESSION NR: AP5003822

E. V. Garner (Proc. Roy. Soc., 189A, 39, 1947) indicate that the polymer is in the gas crystalline state. The small values of the C-C-zigzag projections on the molecular axis can be explained by assuming a helical structure of the polymer chains (C. W. Bunn and E. R. Hazells, Nature, 174, 549, 1954). Calculation of the order of the Bessel functions from $\left(\frac{l}{c}=\frac{n}{p}+\frac{m}{s}\right)$ show that for any helix, Bessel

functions of the zero order correspond to the observed layer lines. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 05Feb64 ENCL: 01 SUB CODE: 00

NO REF SOV: 003 OTHER: 005

Card 2/3

L 33512-65
ACCESSION NR: AP5003622

ENCLOSURE: 01

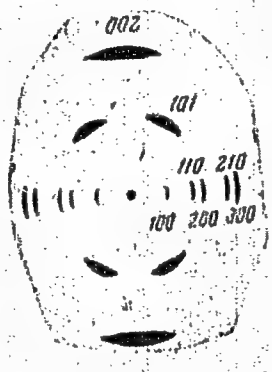

Fig. 1. Electrogram of oriented PTFE films

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GAL'PERIN, Ye.L.; STROGANOV, Yu.V.; [illegible]

Crystallization structure of polyvinylidene fluoride. Vysokom. soed. 7 no.5:933-938 My '65. (MIRA 18:9)

KOLCHIN, I.K.; GAL'PERIN, Ye.L.; BOBKOV, S.S.; MARGOLIS, L.Ya.

Bismuth-molybdenum-phosphorus catalysts of oxidation and of oxidative ammonolysis of propylene. Kin.i kat. 6 no.5:878-883 S-O '65. (MIRA 18:11)

[illegible], B. F., [illegible], I. B.,

"Action of B. abortus," Zhu. Microbiol. & Immunobiol. 12: 294-300, 1934.

GRIGORIEV, P. F.,

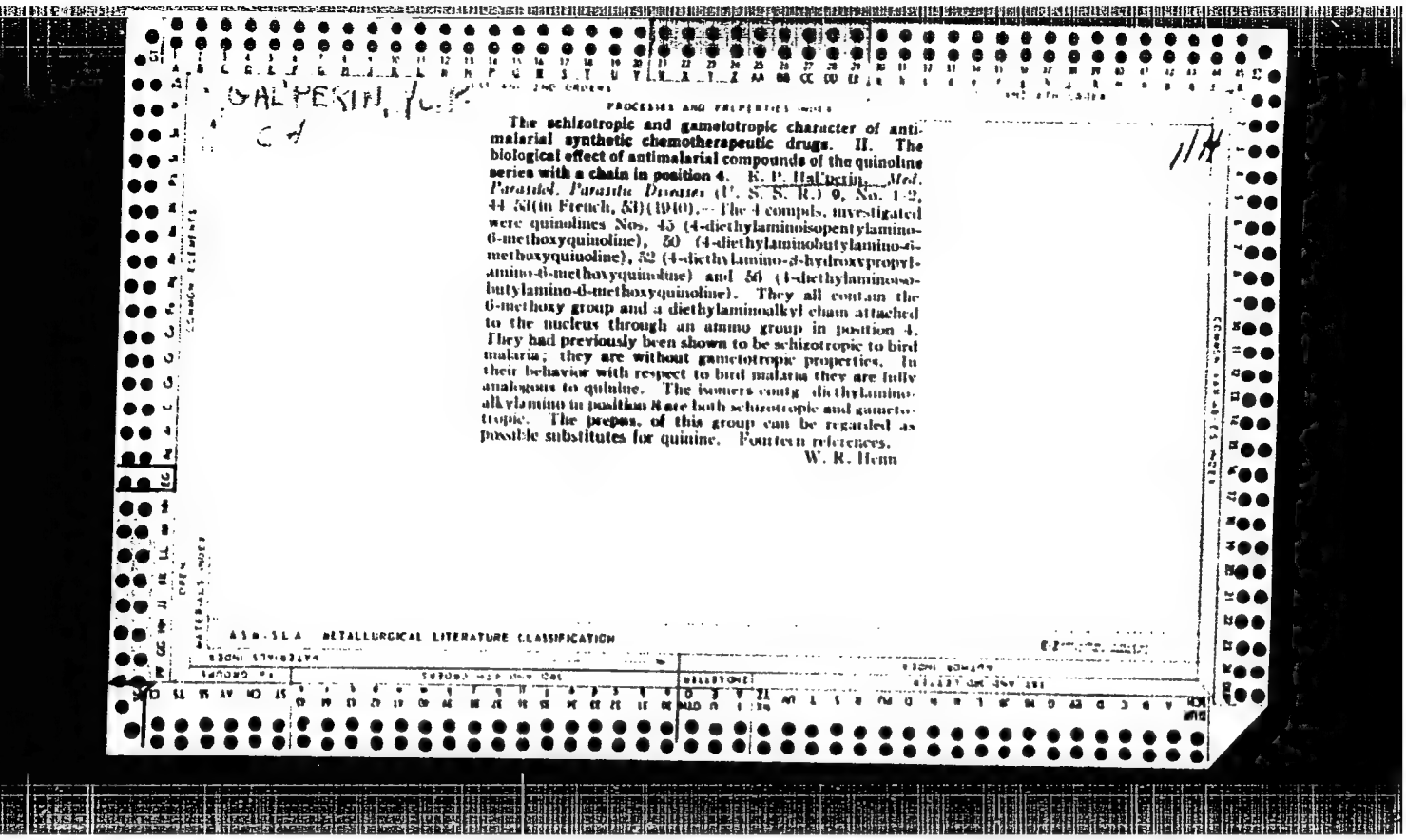
"Chemoflexion," Zentrlbl. f. Bakt. I Abt. Orig. 128:320-6, 1933

Chemotherapeut. Dept., Chem.-Pharmaceut. Inst. Moscow.

GALPERIN, E. P.

"Acridine compounds as a source for remedies. V. The relation between antimalarial effect and changing substituents in position 2 and 6 as well as the amine in the side chain." Maghidson, O. J., Grigorovsky, A. M., and Galperin, E. P. (p. 66)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1938, Volume 8, No. I

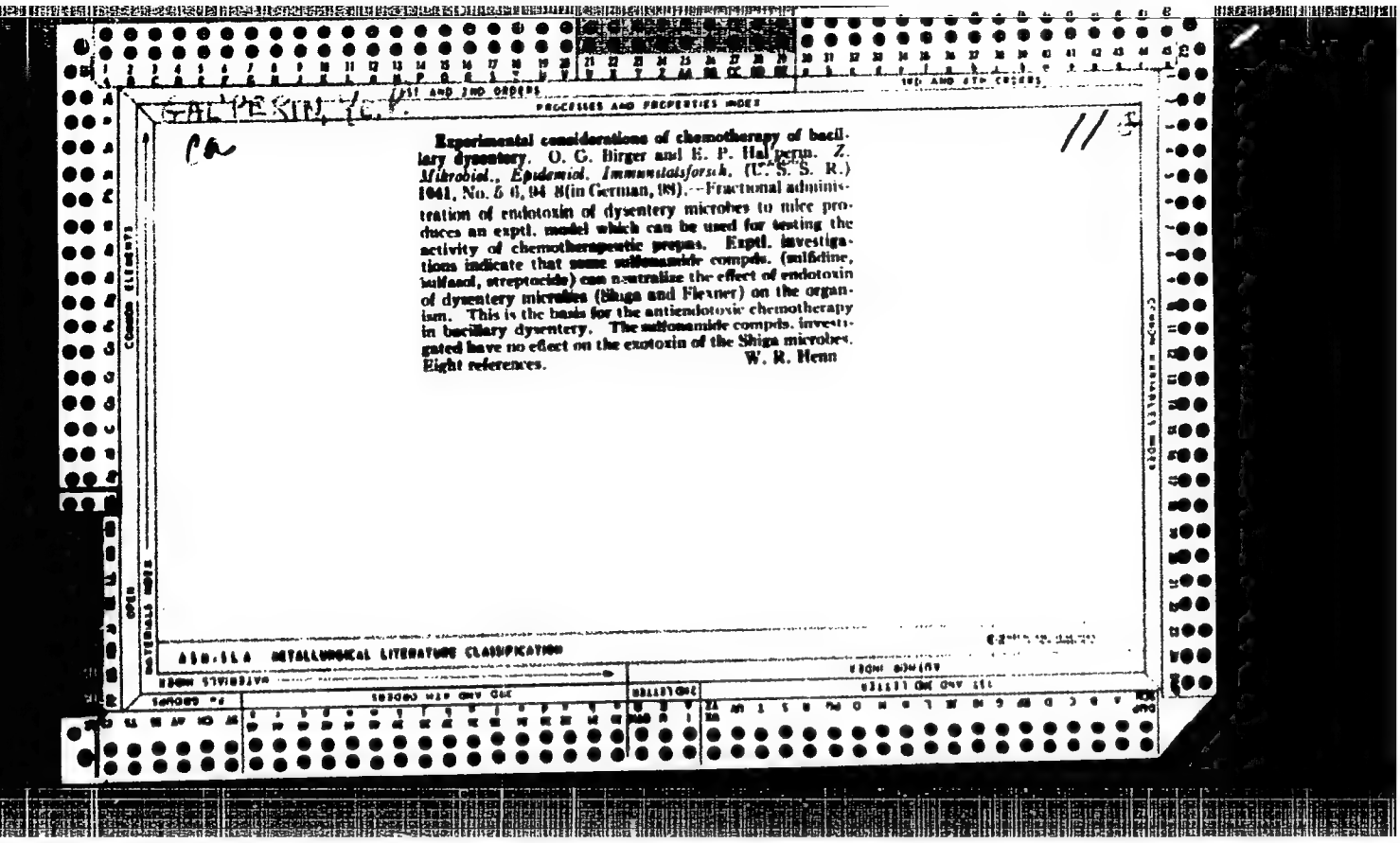


PROCESSES AND PROPERTIES INDEX

The schizotropic and gametotropic character of antimalarial synthetic chemotherapeutic drugs. II. The biological effect of antimalarial compounds of the quinoline series with a chain in position 4. K. P. Hal'perin. *Med. Parasitol. Parasitic Diseases* (U. S. S. R.) 9, No. 1-2, 44-51(in French, 51)(1940).—The 4 compds. investigated were quinolines Nos. 45 (4-diethylaminoisopentylamino-6-methoxyquinoline), 50 (4-diethylaminobutylamino-6-methoxyquinoline), 52 (4-diethylamino-8-hydroxypropylamino-6-methoxyquinoline) and 56 (4-diethylaminoisobutylamino-6-methoxyquinoline). They all contain the 6-methoxy group and a diethylaminoalkyl chain attached to the nucleus through an amino group in position 4. They had previously been shown to be schizotropic to bird malaria; they are without gametotropic properties. In their behavior with respect to bird malaria they are fully analogous to quinine. The isomers contg. diethylaminoalkylamino in position 8 are both schizotropic and gametotropic. The prepns. of this group can be regarded as possible substitutes for quinine. Fourteen references.

W. R. Henn

A53-51A METALLURGICAL LITERATURE CLASSIFICATION



GALPERIN, Ye. P.

Experimental considerations of chemotherapy of bacillary dysentery. O. G. Birger and E. P. Halperin. *Z. Mikrobiol., Epidemiol. Immunitätsforsch.* (U. S. S. R.) 1941, No. 5 6, 94 8(in German, 98).—Fractional administration of endotoxin of dysentery microbes to mice produces an exptl. model which can be used for testing the activity of chemotherapeutic preps. Exptl. investigations indicate that some sulfonamide compds. (sulfidine, sulfazol, streptocide) can neutralize the effect of endotoxin of dysentery microbes (Shiga and Flexner) on the organism. This is the basis for the antiendotoxic chemotherapy in bacillary dysentery. The sulfonamide compds. investigated have no effect on the exotoxin of the Shiga microbes. Eight references.

W. R. Henn

GAL'PERIN, Ye.R., redaktor; GODELEVICH, V.P.; YEVTYANOV, S.I., redaktor; KRISS, P.Zh.; KUNINA, S.L.; POPOV, I.A.; SHTEYN, B.B., redaktor; VOLKOVA, T.V., redaktor; VEYNTRAUB, L.B., tekhnicheskiy redaktor.

[Problems on radiobroadcasting installations] Zadachnik po radioperedaiushchim ustroistvam. Pod red. S.I.Evtianova i E.R.Gal'perina. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1951. 175 p. [Microfilm] (MLRA 7:12)

(Radio--Problems, exercises, etc.)

GALPERIN, Ye. R.

YEVTYANOV, S. I. and Ye. R. GALPERIN

Exercise Book for Formulae Used in the Construction of Radio Transmitters, State Publishing House on Questions Pertaining to Communications and Radio, Moscow, 1951.

Book-CS-G-EG-1205

MUNAYEV, N.A., inzhener-kontr-admiral; SMIRNOV, I.I., kontr-admiral;
GAL'PERIN, Ye.S., kapitan 1 ranga

Don't distort the truth ("Elusive monitor" by I.Vsevolozhskii. Reviewed by N.A.Munaev, I.I.Smirnov, E.S.Gal'perin). Mor.sbor. 44 no.3:89-96 Mr '61. (MIRA 14:4)
(Black Sea region—World War, 1939-1945—Naval operations)
(Vsevolozhskii, I.)

GAL'PERIN, Yu., prepodavatel'

Combined study of kinematics. Prof.-tekh.obr. 18 no.6:18 Je '61.
(MIRA 14:7)

1. Zheleznodorozhnoye uchilishche No.4, Moskva.
(Kinematics--Study and teaching)

GAL'PERIN, Yu.; KHMEL'NITSKAYA, L., red.

[Miracles are created by peple; guide]Chudesa tvoriat liudi; putevoditel'. Moskva, TSintiolektroprom, 1962. 78 p.
(MIRA 15:8)
(Moscow--Exhibitions) (Technological innovations)

GAL'PERIN, Yu., prepodavatel'

Solving the triangles and electrical engineering problems. Prof.-tekh.obr. 20 no.10:13-14 O '63. (MIRA 16:12)

1. Professional'no-tekhnicheskoye uchilishche No.60, Moskva.

GAL'PERIN, Yu., prepodavatel'

Meeting with an author. Prof.-tekh. obr. 21 no.9:32 S '64.
(MIRA 17:11)

1. Professional'no-tekhnicheskoye uchilishche No.60 g. Moskvy.

GAL'PERIN, Yu., prepodavatel'

Short test papers on mathematics. Prof.-tekh.obr. 22 no.8:18 Ag '65. (MIRA 18:12)

1. Professional'no-tekhnicheskoye uchilishche No.60, Moskva.

GAL'PERIN, Yu.B., podpolkovnik med. sluzhby, GLUZMAN, I.S., mayor med.sluzhby

Case of prolonged retention of a contrast medium in the nasolacrimal canal. Oft.zhur. 13 no.5:306-307 '58 (MIRA 11:10)

1. Iz Laringo-oto-rino kafedry im. prof. V.I. Voyacheka i kafedry oftal'mologii (nach. - prof. B.L. Polyak) Voyenno-meditsinskoy ordena Lenina akademii im. S.M. Kirova.
(LACRIMAL ORGANS--RADIOGRAPHY)

GAL'PERIN, Yu.B.; BONDARENKO, L.P.; KVITASH, V.A., kand. med. nauk.

Otogenous abscess of the temporal lobe with atypical clinical course.
Vest. otorin. 21 no.2:90-91 Mr-Ap '59. (MIRA 12:4)

1. Iz Solnechnogorskoy gorodskoy bol'nitsy (Moskovskaya oblast').
(TEMPORAL LOBE, abscess,
otogenous, atypical case (Rus))

KOROLEV, M.F., polkovnik meditsinskoy sluzhby; BOKSHTEYN, M.Ye., podpolkovnik meditsinskoy sluzhby, kand.med.nauk; GAL'PERIN, Yu.B., podpolkovnik meditsinskoy sluzhby

Some problems in the differential diagnosis of chronic highmoritis. Voen.-med.zhur. no.12:54-57 '59. (MIRA 14:1)
(SINUSITIS)

KOZHEVNIKOV, P.A.; GAL'PERIN, Yu.B.

Case of emphysema of the eyelids of rhinogencus origin. Zhur. ush., nos. i gorl. bol. 20 no. 3:66 My-Je '60. (MIRA 14:4)

1. Iz Okruzhnogo voyennogo gospitalya.
(EYELIDS--DISEASES) (EMPHYSEMA)

GAL'PERIN, Yu.B. (g.Solnechnogorsk, Moskovskoy oblasti); KUDRINA, A.Ye. (g.Solnechnogorsk, Moskovskoy oblasti)

Emphysema of the neck following tonsillectomy. Zhur. ush., nos. i gorl.bol. 22 no.1:92 Ja-F '62. (MIRA 15:5)
(TONSILS—SURGERY) (NECK—DISEASES)
(EMPHYSEMA)

FISHZON-RYSS, Yu.I., kand.med. nauk (Moskva); GAL'PERIN, Yu.B.(Moskva)

Interrelations between chronic tonsillitis and chronic gastritis.
Vest. otorin. no.1:70-74 '63. (MIRA 16:9)
(TONSILS—DISEASES) (STOMACH—INFLAMMATION)

FISHZON-RYSS, Yu.I., kand. med. nauk (Moskovskaya oblast'); GAL'PERIN, Yu.B. (Moskovskaya oblast'); SHIPIK, N.I. (Moskovskaya oblast').

State of the stomach in chronicn tonsillitis. Zhur. ush., nos. i gorl. bol. 23 no.5:34-38 S-O'63 (MIRA 17:3)

BAYKOV, S.D.; GAL'PERIN, Yu.F.; IOFFE, A.F.; SHLOKOV, G.N.

Ferrites with rectangular hysteresis loops for electronic-physical apparatus. Mnogokan. izm. sist. v iad. fiz. no.5:158-164 '63. (MIRA 16:12)

GAL'PERIN, Yu.G., prepodavatel'.

Mastering technical terms in work classes. Politekh. obuch. no.1: 81 Ja '58. (MIRA 10:12)

1. Shkola No.589, Moskva.
(Technology--Terminology)

Gal'perin Yu. I.

51-6-23/25

AUTHOR: Gal'perin, Yu. I.

TITLE: Remarks on the Paper of V. V. Shuleykin and P. F. Shakurov "The Sodium Line in the Absorption Spectrum of Air Above the Sea". (Po povodu stat'i V. V. Shuleykina i P. F. Shakurova "Liniya natriya v spektre pogloshcheniya vozdukha nad morem".)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol. III, Nr. 6, p.672. (USSR)

ABSTRACT: A letter. The present author criticizes the above paper of V. V. Shuleykin and P. F. Shakurov (Ref.1). Shuleykin and Shakurov photographed an emission spectrum of an incandescent lamp after passage through 10 km of air about 50 m above the sea surface. The beam from the lamp was not parallel and was not focused on the spectrograph slit. The D-doublet of Na was not resolved and it is hardly noticeable in Fig.1 of Ref.1. Shuleykin and Shakurov's paper does not give the essential experimental details such as the type of the spectrograph used, its resolving power, dispersion, parameters of the camera, etc. Their calculation of line intensity and derivation of the

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Remarks on the Paper of V. V. Shuleykin and P. F. Shakurov "The Sodium Line in the Absorption Spectrum of Air Above the Sea".

atomic absorption coefficient are both erroneous. The present author points out also that the purported estimate of the number of excited Na atoms can only apply to non-excited atoms in their ground state. There is 1 Russian reference.

ASSOCIATION: Institute of Atmospheric Physics, Academy of Sciences of the USSR. (Institut fiziki atmosfery, AN SSSR.)

SUBMITTED: July 22, 1957.

AVAILABLE: Library of Congress.

Card 2/2

GALPERIN, G. I.

Spectrographs to be used for investigations of atmospheric emission during the International Geophysical Year of 1957-8. G. I. Galperin, A. V. Mironov, and N. N. Shefov. *Mem. soc. roy. sci. Liège* 16, 68–9(1957).—A short description of 3 spectrographs which will be used for upper atm. investigations during the International Geophys. Year. These instruments will cover the spectral region from 3000 A. to 11,000 A.

Harry C. Allen, Jr.

GAL'PERIN, Yuriy.

"Aurora borealis; notes of a journalist" by IUrii Gal'perin. Geog. v shkole 20 no.3:79 My-Je '57. (MLRA 10:6)
(Auroras)

AUTHOR: Gal'perin, Yu. I.

TITLE: Observations of hydrogen emission in aurora. (Nablyudeniya izlucheniya vodoroda v polyarnykh siyaniyakh).

PERIODICAL: Astronomicheskii Zhurnal, 1957, Vol.34, No.1, pp.131-134 (USSR)

Vegard (1) and Gartlein (2) have detected broadening of lines of the Balmer series of hydrogen in aurora. Spectrograms taken by them (and also by Meinel (3)) at the magnetic zenith and the magnetic horizon have shown that protons move down the Earth's magnetic lines of force with velocities of the order of 1000 km/sec.

The present work was carried out at the Northern Station of the Institute of Physics of the Atmosphere at Loparskoi ($\varphi = 68^{\circ}38'$ and $\lambda = 2^{h}13^{m}.3$). The apparatus was similar to that described in ref.(5). The spectrograph SP-48 GOI had the following characteristics:

Illumination - 1 : 0.8
Dispersion - 83.5 Å/mm at H_{α}
Resolving limit: 2 Å (Panchrom X)

17 spectrograms were obtained for H_{α}, of which two were taken at the magnetic horizon and the remainder at the magnetic zenith (strictly, 8° north of the zenith).

Table 1 gives the K-index of magnetic disturbances during the experiments, averaged over all the observatories in the U.S.S.R. The K-index did not exceed 5.

Observations of hydrogen emission in aurora. (Cont.)

Fig.1 shows spectrograms Nos.14, 15, 16 (magnification x21; microphotometer slit width .65 mm; resolving limit 3 Å approx.) The fourth spectrogram in Fig.1 is the background without the H_α. For comparison, the spectrograms of Meinel and Gartlein are shown in Fig.2. The resolving limits in the latter cases were 7 Å and 15 Å respectively.

Fig.3 shows the contours of H_α for the three best spectrograms taken at the zenith. These contours enable one to determine the velocities v_A, v_B, v_C, and v_D which correspond to the following points on the contours: A - maximum observed velocity of recession from the observer ("red shift"); B - maximum blackening; C - blackening corresponding to 0.1 of maximum; D - maximum observed velocity of approach towards the observer ("blue shift"). These velocities were found to be:

No	v_A	v_B	v_C	v_D	km/sec
14	+ 250	- 300	- 1700	- 1850	
15	+ 350	- 350	- 1700	- 1950	
16	+ 300	- 400	- 1950	- 2050	

The errors are:- $\pm$ 100 km/sec in v_B and $\pm$ 200 km/sec for the other velocities. The most reliable of these is v_C.

Observations of hydrogen emission in aurora (Cont.).

The results for the two spectrograms taken at the magnetic horizon were less reliable. Their half-widths (H_α) were 14 and 17 Å respectively. This corresponds to speeds of ± 300 and ± 400 km/sec. Taking into account the instrumental contour these values reduce to ± 250 and ± 300 km/sec. Four figures, two tables. 9 references, 4 of which are Russian.

Physics of the Atmosphere Institute
Ac.Sc. USSR.

Recd. Aug.11, 1956.

GAL'PERIN, Yu. I.: Master Phys-Math Sci (diss) -- "Hydrogen emission in the spectra of polar radiations". Moscow, 1958. 9 pp, (Acad Sci USSR, Inst of the Physics of the Atmosphere), 130 copies (KL, No 1, 1959, 113)

AUTHOR: Gal'perin, Yu.I. 33-35-3-8/27

TITLE: Hydrogen Line Profiles in the Auroral Spectra (O profilyakh vodorodnykh liniy v spektre polyarnykh siyaniy)

PERIODICAL: Astronomicheskiy zhurnal, 1958, Vol 35, Nr 3, pp 382-389 (USSR)

ABSTRACT: The author analyzes older and modern results on the profiles of the H-lines in the auroral spectrum. His own results and those of Krasovskiy [Ref 12,13] on the H_α - lines are particularly considered (on these results it was already reported at the Geodetic - Geophysical Meeting in Toronto in 1957). From these results which were obtained, however, in Loparskaya with the high degree of latitude $\varphi = 64^\circ$, the author concludes the penetration of a considerable number of protons with initial velocities of 1000 - 2000 km/sec. It is assumed that such particles cause the luminescence of auroras in high altitudes.
There are 1 table, 6 figures, and 23 references, 6 of which are Soviet, 11 American, 3 Norwegian, 1 French, and 2 English.

ASSOCIATION: Institut fiziki atmosfery Akademii nauk SSSR (Institute for Atmospheric Physics of the Academy of Sciences, of the USSR)

Card 1/2

GALPERIN, Yu. I.

HYDROGEN EMISSION AND TWO TYPES OF AURORAL SPECTRA

by

Yu. I. Gal'perin

ABSTRACT

The following are some results of the studies of auroral hydrogen emission obtained at the Northern Research Station at Loparskaya for the last three years.

The division of auroral spectra into two types is shown. The first one is high altitude luminescence of which permitted atomic lines with high excitation potentials are characteristic. The second one is natural to lower greenish aurorae and includes strong molecular bands.

It is shown that hydrogen emission begins sometimes before any visible aurorae forms appear and its intensity variation often precedes that of auroral luminescence by 1-2 hours. A feeble luminescence of the A-type (°atomic°) appears together with hydrogen emission before auroral commencement.

Smoothed typical hydrogen profiles for different angular distances from the magnetic horizon are given.

It is pointed out that these profiles, a detailed analysis of which is given in a special article, testify that most auroral protons have initial velocities considerably less than 2000 km/sec.

Examples of H_β and H_γ profiles obtained in the magnetic zenith are shown.

Considerable correlation between hydrogen emission appearance and radio reflections from aurorae at 1m. wave length is established. The connection between hydrogen emission and the simultaneous variations of the Earth magnetic field can hardly be observed.

Spectral, Electrophotometric and Radar Research on Aurorae and Night Airglow, edited by V. I. Krasovskiy, Moscow, Izdatel'stvo Akad. Nauk SSSR, 1959.

GALPERIN, YU. I.

ON THE NATURE OF HARD CORPUSCLES IN THE UPPER ATMOSPHERE
I.S. Shklovsky, V.I. Krasovsky, Yu.I. Galperin, Svetilitsky, Ye. M.

1. Investigations conducted by Soviet and American artificial earth satellites have led to the detection of a region of intensive corpuscular radiation commencing at an altitude of several hundreds of kilometres and consisting of two "belts".

2. An analysis of the spatial distribution of these belts permits drawing certain conclusions concerning the mechanisms of generation and "esoape" of hard corpuscles.

3. An analysis is given on the relationship between aurorae and streams of solar corpuscles, on the one hand, and the energy spectrum and concentration of hard corpuscles in the outer "belt", on the other.

4. Calculations are made on the generation of hard corpuscles in the inner "belt" on the basis of the mechanism of decay of albedo neutrons.

5. There is given an analysis of other possibilities of generation of hard corpuscles in the upper atmosphere. Investigations of High-Energy Heavy Nuclei in the Primary Cosmic Radiation Close to the Geomagnetic Equator (Guam, Marianas Islands) D. M. Haskin, P. L. Jain, E. Lohrmann, Marcel Schein and M. Teucher.

In a large stack of nuclear emulsion exposed to the cosmic radiation at 102,000 feet near the geomagnetic equator, 540 tracks of high-energy heavy nuclei were located in a systematic scan and followed along the track.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

SOV/49-59-8-7/27

AUTHORS: Krasovskiy, V. I., Shklovskiy, I. S., Gal'perin, Yu.I. and Svetlitskiy, Ye. M.

TITLE: Detection of Electrons in the Upper Atmosphere with Energies of About 10 keV on the Third Satellite

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 8, pp 1157-1163 (USSR)

ABSTRACT: An account is given of the results of measurements of electron streams with energies of 10 to 40 keV. The measurements were carried out by means of two fluorescent screens covered with thin pieces of absorbing aluminium foil placed on the satellite. Their radiation was recorded by photoelectron multiplier. It was found that the stream intensity decreased sharply with a decrease of energy. The stream of energy at high latitudes during the night was observed several tens of ergs/cm^2.sec.str. Fig 1 gives an examples of the relationship of the intensity of a stream of electrons and its equivalent energy a measured on May 15, 1958 at -42 to -54° magnetic latitude in the region 1720-1880 km high over the South Pacific.

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Detection of Electrons in the Upper Atmosphere with Energies of About 10 keV on the Third Satellite

The concentric circles represent repeated values. There are 1 figure and 26 references, 9 of which are Soviet and 17 English.

ASSOCIATION: Akademiya nauk SSSR Institut fiziki atmosfery (Institute of Physics of the Atmosphere, Ac.Sc., USSR)

SUBMITTED: April 3, 1959

Card 2/2

66235

S/049/59/000/12/009/027
E032/E591

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AUTHOR: Shklovskiy, I.S., Krasovskiy, V.I. and Yu.I. Gal'perin

TITLE: On the Nature of Corpuscular Radiation in the Upper Atmosphere

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 12, pp 1799-1806

ABSTRACT: Soviet and American investigations carried out with the aid of artificial Earth satellites have led to the discovery of an intense belt of corpuscular radiation which begins at an altitude of 400-600 km (Refs 1-4). Recent results obtained with the aid of cosmic rockets have given the spatial distribution of the intensity of the hard corpuscular radiation surrounding the Earth (Refs 5 and 6). It transpired that there are two belts of corpuscular radiation. The first belt (the inner belt) forms an equatorial ring bounded (approximately) by the geomagnetic latitudes ± 40°. According to Ref 6, the width of this belt is somewhat smaller. The belt has a concentration maximum at an altitude of about 3000 km(above the geomagnetic equator). The second (outer) belt extends up to 6-8 terrestrial radii and its concentration maximum is at a distance of

On the Nature of Corpuscular Radiation in the Upper Atmosphere

3.5-4 terrestrial radii. In order to explain the origin of the belt of fast charged particles surrounding the Earth, a number of authors have put forward the neutron decay hypothesis (Refs 7-9). This is the so-called trapped albedo theory of the radiation belt. However, an analysis of the spatial distribution of the particles in the two belts excludes, in the opinion of the present authors, the albedo theory. In fact, the presence of an equatorial belt means that the particles forming this belt "avoid" moderate and high geomagnetic latitudes. Apparently this is a result of the fact that geomagnetic disturbances and polar auroras at higher latitudes remove particles from the inner belt and prevent their accumulation. This means that the equatorial belt is supplied with particles only from below, i.e. from the lower layers of the terrestrial atmosphere. On the other hand, the spatial distribution of particles in the outer belt clearly indicates an extra-terrestrial source. Again, the particles in the outer belt, once they appear in the magnetic trap at the distance of 3.5-4 terrestrial

On the Nature of Corpuscular Radiation in the Upper Atmosphere

radii, will accumulate in this region over a longer interval of time than at the distance of 5-6 terrestrial radii since the frequency and amplitude of geomagnetic disturbances at latitudes of 50-60° are greater by a factor of several tens than in the zone of maximum repeatibility of polar auroras. This explains the observed position of the maximum in the outer belt. The difference in the origin of the particles in the two belts leads also to a difference in their energies. Thus, an analysis of the spatial distribution of the particles in the two radiation belts leads to the conclusion that the main reason for the escape of particles in the outer (and apparently also in the inner) zone are geomagnetic disturbances and the associated auroras. Of course in the case of the inner belt the relevant auroras are the low-latitude auroras which are relatively rare. During geomagnetic disturbances, the normal field at high altitudes is disturbed and the particles confined in the trap can escape both into the inter-planetary space and

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E032/E591

downwards into the more dense layers of the terrestrial atmosphere, thus causing polar aurorae. [illegible] escape of the particles from the trap in the [illegible] direction is suggested to be [illegible] mechanism. If during the entry of solar particles into the terrestrial atmosphere, the corpuscular [illegible] density in the upper layers of [illegible] order of [illegible] energy density [illegible] [illegible] [illegible] pre-determined given [illegible] [illegible] [illegible] magnetic [illegible] conditions the adiabatic [illegible] Using recent data [illegible] dynamic equilibrium [illegible] the interaction of [illegible] with the [illegible] frozen-in [illegible] magnetic field. [illegible] this interaction [illegible] between [illegible] same time, a fraction of the [illegible]

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E052/E591

On the Nature of Corpuscular Radiation in the Upper Atmosphere

charged particles as a result of the interaction of cosmic rays with the atmosphere, leading to the formation of neutrons (other than those formed in stars). Meson decays are also a source of unstable neutral particles. Another more powerful source are nuclear explosions. There are thus two sources for the inner belt, the first of which is the trapped cosmic ray albedo which can supply approximately $2 \times 10^{22} - 2 \times 10^{23}$ electrons with energy up to 780 keV and $10^{20} - 10^{21}$ protons with energy up to 30 MeV during a time interval of $10^{6} - 10^{7}$ sec. The second source is the nuclear explosion source, which at times can considerably increase the intensity of the hard corpuscular radiation in the equatorial belt. It is pointed out that it would be very desirable to have further data on the identification and the energy spectrum in the equatorial belt.
There are 1 table and 25 references, 11 of which are Soviet, 11 English and 1 French.

ASSOCIATION: Akademiya nauk SSSR Institut fiziki Atmosfery
Card6/6 (Ac.Sc., USSR, Institute of Physics of the Atmosphere)

SUBMITTED: April 22, 1959

3(1)

AUTHORS: Bagaryatskiy,B.A., and Gal'perin,Yu.I. SOV/33-36-1-28/31

TITLE: On Hydrogen Line Profiles in the Spectra of Aurorae

PERIODICAL: Astronomicheskiy zhurnal, 1959,Vol 36,Nr 1,pp 192-193 (USSR)

ABSTRACT: In the present short note the authors compare their theoretical calculations with the averaged hydrogen emission profile observed in aurorae.
There are 7 references, 3 of which are Soviet, and 4 American.

ASSOCIATION: Institut fiziki atmosfery Akademii nauk SSSR (Institute of Atmospheric Physics of the AS USSR)

SUBMITTED: September 12, 1958

Card 1/1

3 (7), 29 (2), 29 (5)

AUTHORS: Krasovskiy, V. I., Shklovskiy, I. S., Gal'perin, Yu. I., Svetlitskiy, Ye. M.

SOV/20-127-1-20/65

TITLE: The Discovery in the Upper Atmosphere by Means of the Third Sputnik of Electrons Having an Energy of About 10 kev (Obnaruzheniye v verkhney atmosfere s pomoshch'yu tret'yego sputnika elektronov s energiyey okolo 10 kev)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, pp 78 - 81 (USSR)

ABSTRACT: In the third Soviet sputnik (which was launched on May 15, 1958) an experiment concerning the direct discovery of electrons of not very high energy was carried out in the upper atmosphere (Refs 1,2,3). It is characteristic of this experiment that practically only electrons of some dozens of kev were recorded. The indicators used did not react to the X-ray radiation generated by these electrons in the atmosphere and in the shell of the sputnik. Therefore, thin fluorescence screens (ZnS, activated Ag) with 2 mg matter per 1 cm^2 were used. As the authors used aluminum foils of various thicknesses as absorbers, it was possible, besides the intensity of fluxes of electrons of not particularly high energies, to evaluate also the "equivalent"

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energy of the electrons. The limiting diaphragms fitted before the indicators warranted the recording of corpuscles within a solid angle of 1/4 steradian. The radiotelemetric material determined furnished several results of great geophysical interest: Electrons of ~10 kev were detected in altitudes of from 470 to 1880 km above sea level. The lowest intensity was found over the geomagnetic equator in an altitude of ~1300 km above sea level. At the "equivalent" energy of ~20 kev its minimum amperage was estimated at 10^{-14} a. cm^{-2} steradian^{-1}. In medium and polar latitudes (up to 60^{o} geomagnetic latitude) an amperage of 5.10^{-11} a. cm^{-2} steradian^{-1} and sometimes also of more than 10^{-10} a. cm^{-2} steradian^{-1} is usual for electrons with an equivalent energy of 12 kev by night. With the construction of the measuring apparatus, such high intensities were not expected. Therefore, the intensities exceeded the apparatus scale, and the intensity and "equivalent" energy of the electrons recorded could not be evaluated. A diagram shows the dependence

of the electron fluxes on their "equivalent" energy within the range of from -42 to -54° geomagnetic latitude in altitudes of from 1720 to 1880 km in the night of May 15, 1958 above the southern part of the Pacific. When the sputnik rotated round its two axes, the intensity of the electron fluxes changed considerably. The electron fluxes are probably the cause of the heating and expansion of the upper atmosphere (which was deduced from the slowing-down of the sputnik). There are 1 figure and 17 references, 9 of which are Soviet.

ASSOCIATION: Institut fiziki atmosfery Akademii nauk SSSR (Institute for the Physics of the Atmosphere of the Academy of Sciences, USSR)

PRESENTED: April 14, 1959, by A. I. Berg, Academician

SUBMITTED: April 14, 1959

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AUTHOR: Gal'perin, Yu.I., Candidate of Physico-Mathematical Sciences

TITLE: "Hot" Electrons in the Earth Atmosphere

PERIODICAL: Znaniye-Sila, 1960, No. 3, pp. 36 - 37

TEXT: The author describes the research carried out by Professor V.I. Krasovskiy to establish the origin of the corona of the earth. Based on results obtained, Professor Krasovskiy and his assistants concluded that the electromagnetic corona of the earth is caused by sun corpuscules "caught" in the magnetic field of the earth.

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S/560/61/000/006/008/010
E032/E314

AUTHORS: Krasovskiy, V.I., Shklovskiy, I.S., Gal'perin, Yu.I., Svetlitskiy, Ye.M., Kushnir, Yu.M. and Bordovskiy, G.A.

TITLE: Discovery of Approximately 10 keV Electrons in the Upper Atmosphere

PERIODICAL: Akademiya SSSR. Iskusstvenyye sputniki Zemli. No. 6. Moscow, 1961, pp. 113 - 126

TEXT: Prior to experiments carried out with the aid of artificial Earth satellites, it was assumed that the natural glow, heating, and ionization of the upper atmosphere was largely due to hard electromagnetic radiation of solar origin. It was considered that corpuscular radiation (protons, α-particles and electrons) could only penetrate the atmosphere in the polar regions and thereby give rise to geomagnetic disturbances and aurorae. It was found that aurorae were frequently initiated by protons with a considerable velocity spread. However, in many cases, hydrogen-emission was not observed and the appearance of aurorae was provisionally associated with electrons having

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energies up to a few hundreds or thousands of eV. An attempt was then made by Krasovskiy et al (Ref. 3 - UFN, 64, 425, 1958) to detect these electrons from the third Soviet artificial Earth satellite. The apparatus employed consisted of two very thin phosphors covered by aluminium foils. The scintillations were recorded by photomultipliers and the amplified photo-multiplier signal was stored and later telemetered to Earth. Owing to the presence of the aluminium foils (which were of differing thicknesses) it was possible to estimate both the intensity and the energy of the electrons which were most effective in exciting the phosphors. A particular feature of this apparatus was that it was sensitivie only to electrons and did not respond to protons and photons of comparable energy. The apparatus indicated the presence of large electron currents at altitudes up to 900 km in the region of the southern part of the Pacific Ocean, the energy of these electrons being of the order of 10 keV. These currents were often so large that the apparatus gave off-scale readings since such high currents were not expected. In the case of these off-scale readings the energy

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flux exceeded 100 erg $cm^{-2}sec^{-1}$ at altitudes up to 1 900 km from the Earth's surface. Fig. 2 shows the calibration curves for the two detectors employed in this experiment. The dashed lines correspond to aluminium foil of 0.8×10^{-3} g/cm^2 and the continuous lines correspond to aluminium foil of 0.4×10^{-3} g/cm^2. The numbers on these lines indicate the energy of the electrons in keV. These calibration curves were obtained in laboratory experiments using parallel beams of mono-energetic electrons. The current density of monochromatic electrons (A/cm^2) is plotted along the vertical axis and the telemetric channel number, which is proportional to the logarithm of the photomultiplier current, along the horizontal axis. Fig. 3 shows the difference ΔK between the logarithmic-scale divisions of the two detectors as a function of the energy of the electrons used in the calibration. The ratio of the photo-currents of the two detectors depends on the energy of the electrons or, more precisely, on the form of the energy spectrum. This relation was determined in

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preliminary laboratory experiments with mono-energetic electrons. The form of the energy spectrum recorded by the satellite is unknown and comparison of the readings produced by the two detectors can only be used to estimate an equivalent energy. This equivalent energy E_{equiv} is defined as the energy of a monochromatic beam which gives the same photo-current ratio for the two detectors as the observed value. Proceeding along these lines one can also define an equivalent current and an equivalent energy flux. It can easily be shown that these equivalent quantities give, in fact, the lower limits of the measured quantities. Consideration of the telemetric records, a number of which are reproduced in the present paper, showed that the most frequently recorded energies occurred in the neighbourhood of 14 keV. Since the sensitivity of the apparatus is considerably higher for high-energy electrons, it follows that in the case of non-monochromatic electrons the maximum flux corresponds to an energy below 14 keV. This maximum can be determined if some energy-distribution function